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SPECIFICATION FOR BUTACHLOR GRANULES

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *March* 1980

Indian Standard
SPECIFICATION FOR BUTACHLOR GRANULES

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(*Continued on page* 8)

AMENDMENT NO. 1 NOVEMBER 1982
TO
IS : 9362-1980 SPECIFICATION FOR BUTACHLOR GRANULES

Corrigendum

(*Page* 7, *clause* **A-2.1.3**, *line* 11) — Substitute 'unfiltered' *for* 'unifiltered'.

Alterations

(*Page* 4, *clause* **2.2.1**) — Substitute the following for the existing clause:

'**2.2.1** *Description* — The product shall consist of dry, free flowing granules, free from visible extraneous matter and dust except for the amount specified (*see* **2.2.3**). It may contain added colouring matter.'

(*Page* 4, *clause* **2.2.2**):

a) *Heading* — Substitute '*Sieving Requirements*' *for* '*Particle Size*'.

b) *Line* 5 — Substitute '**12.1**' *for* **12.2**'.

(*Page* 4, *clause* **2.2.2.1**) — Substitute the following for the existing clause:

'**2.2.2.1** The ratio of lower to upper limit of the sieve sizes declared under **2.2.2** shall not exceed 1:3.'

(*Page* 4, *clause* **2.2.3**) — Substitute the following for the existing clause:

'**2.2.3** *Dust* — When determined by the method described in **12.1** of IS : 6940-1982*, not more than 1·0 percent by mass of the product shall pass by mass through 75-micron IS Sieve [*see* IS : 460 (Part I)-1978]. The material retained on the sieve should comply with the requirements of **2.3.1**.'

(*Page* 4, *clause* **2.2.3.1**) — Delete.

(*Page* 4, *clause* **2.2.4.1**, *line* 1) — Substitute '24 hours' *for* '14 days'.

(*Page* 4, *clause* **2.3.1**) — Substitute the following for the existing clause:

'**2.3.1** *Butachlor Content* — When determined by the method prescribed in Appendix A, the observed butachlor content percent (*m/m*), of any of the samples shall not differ from the nominal value by more than the percent tolerance applied to the declared nominal value as given below:

Nominal Value, Percent	*Tolerance, Percent*	
Up to 9	+ 10 − 5	of the nominal value '
Above 9 and below 50	± 5	
50 and above	+ 5 − 3	

(*Page* 4, *foot-note with* '†' *mark*) — Substitute the following for the existing foot-note:

'†Specification for test sieves: Part I Wire cloth test sieves (*second revision*). '

(*Page* 6, *clause* **A-1.1**) — Delete.

(AFCDC 6)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 SEPTEMBER 1987

TO

IS:9362-1980 SPECIFICATION FOR BUTACHLOR GRANULES

(Page 3, clause 2.1.1) - Add the following new clause after 2.1.1:

"2.1.2 The blank granules employed in the formulation of this product shall be bentonite conforming to IS:9666-1980 'Specification for blank granules'."

[Page 4, clause 2.3.1 (see also Amendment No. 1)] - Substitute the following for the existing clause:

"2.3.1 Butachlor Content - When determined by the method prescribed in Appendix A of IS:9355-1980 'Specification for butachlor, technical', the observed butachlor content, percent (m/m), of any of the samples shall not differ from nominal value by more than the percent tolerance applied to the declared nominal value as given below:

Nominal Value, Percent	Tolerance, Percent	
Up to 9	+ 10 - 5	of the nominal value
Above 9 and below 50	± 5	
50 and above	+ 5 - 3	

2.3.1.1 The actual value of the butachlor content in the formulation shall be calculated to the second decimal place for rounding off to the first decimal place before applying the tolerances given in 2.3.1.

2.3.1.2 The average content of all the samples taken shall not be lower than the declared nominal content."

[*Pages* 4 *and* 5, *clauses* 2.2.2, 2.2.3, 2.2.5 *and* 2.3.2 (*see also Amendment No.* 1)] - Substitute 'IS:6940-1982*' *for* 'IS:6940-1973*', wherever occurs.

(*Pages* 4 *and* 5, *foot-note with* '*' *mark*) - Substitute the following for the existing foot-note:

'*Methods of test for pesticides and their formulations (*first revision*).'

(*Page* 6, *clause* 4.1 *and note*) - Substitute the following for the existing matter:

"4.1 Representative samples of the material shall be drawn according to IS:10627-1983 'Methods for sampling of pesticidal formulations'."

(*Page* 6, *clause* 5.2) - Add a new clause after 5.2:

'5.2.1 Weigh 5.0 g of granules and transfer to 100 ml stoppered glass bottle. Add 25 ml of acetone and shake mechanically for 30 minutes and filter. Then proceed for estimation of butachlor.'

(*Pages* 6 *and* 7, *Appendix* A) - Delete.

(AFCDC 6)

AMENDMENT NO. 3 MAY 1994
TO
IS 9362 : 1980 SPECIFICATION FOR BUTACHLOR GRANULES

(*Page* 4, *clauses* **2.2.4** *and* **2.2.4.1**) — Delete.

(*Page* 6, *clause* **4.1**) — Substitute the following for the existing:

'When freshly manufactured material in bulk quantity is offered for inspection, representative samples of the material shall be drawn and tested as prescribed in IS 10627 : 1983 within 90 days of its manufacture. When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627 : 1983. However, the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under clause 2.3.1 of the standard.'

(FAD 1)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR BUTACHLOR GRANULES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 January 1980, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 Butachlor granules are used as herbicide in the agricultural field.

0.3 Butachlor granules are generally manufactured to contain 5 percent (*m*/*m*) of butachlor.

0.4 In the preparation of this standard due consideration has been given to the provisions of the Insecticides Act, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for butachlor granules.

2. REQUIREMENTS

2.1 Constituents—The material shall consist of butachlor, technical as the only active ingredient impregnated on suitable carrier(s) together with binder(s), stabilizer(s) and/or other formulants.

2.1.1 Butachlor, technical employed in the formulation of this material shall conform to IS : 9355-1980†.

---

*Rules for rounding off numerical values (*revised*).

†Specification for butachlor, technical.

2.2 Physical—The material shall comply with the physical requirements specified in **2.2.1** to **2.2.5**.

2.2.1 *Description*—The product shall consist of dry, free flowing granules, free from visible extraneous matter and dust except for the amount specified (*see* **2.2.3**). It may contain added colouring matter. When dusted from a granule applicator, the material shall come freely without clogging or bridging the apparatus.

2.2.2 *Particle Size*—Not less than 97 percent by mass of the product shall pass through a test sieve having a mesh size of the upper declared limit and not more than 5 percent by mass of the product shall pass through a test sieve having a mesh size of lower declared limit when determined by the method described in **12.2** of IS : 6940-1973* [*see* **3.2** (a)].

2.2.2.1 The ratio of lower to upper particle sizes shall not exceed 1 : 2.

2.2.3 *Dust*—When determined by the method described in **12.2** of IS : 6940-1973*, not more than 1·0 percent by mass of the product shall pass by mass through 75-micron IS Sieve (*see* IS : 460-1962†).

2.2.3.1 The portion passing through this sieve shall not contain more than 8 percent by mass of the declared nominal active ingredient when determined by the method described in Appendix A

2.2.4 *Storage Stability*

2.2.4.1 *Heat stability*—After storage at 54 ± 2°C for 14 days the product shall continue to comply with the requirements of **2.2.1** to **2.2.4**, **2.3.1** and **2.3.2**.

2.2.5 *Moisture Content*—When determined by the method prescribed in **4** of IS : 6940-1973*, the moisture content of the material shall not exceed 4·0 percent by mass

2.3 Chemical—The material shall comply with the chemical requirements specified in **2.3.1** and **2.3.2**.

2.3.1 *Butachlor Content*—When determined by the method prescribed in Appendix A, the observed butachlor content, percent (*m*/*m*), of anyof the samples shall not differ from the nominal value by more than the percent tolerance applied to the declared nominal value as given below:

---

*Methods of tests for pesticides and their formulations.

†Specification for test sieves (*revised*).

Nominal Value, Percent	*Tolerance, Percent*	
Up to 9	+10 − 5	
10 and below 50	± 5	of the nominal value
50 and above	+ 5 − 3	

2.3.1.1 The actual value of the butachlor content in the formulations shall be calculated to the second decimal place for rounding off to the first decimal place before applying the tolerances given in **2.3.1**.

2.3.2 *Acidity*—When tested by the method prescribed in **11.3** of IS : 6940-1973*, the acidity (as H_2SO_4), of the material shall be not more than 0·5 percent by mass.

3. PACKING AND MARKING

3.1 Packing—The material shall be packed as per requirements given in IS : 8190 (Part I)-1980†.

3.2 Marking—The containers shall bear legibly and indelibly the following information and any other information as is necessary under the Insecticides Act and Rules :

a) Name of the material and particle size (*see* **2.2.2**);
b) Name of the manufacturer;
c) Date of manufacture;
d) Batch number;
e) Net mass of the contents;
f) Nominal butachlor content, percent (*m/m*); and
g) A cautionary notice worded as in the Insecticides Act and Rules.

3.3 BIS Certification Marking

The product may also be marked with Standard Mark.

3.3.1 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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*Methods of tests for pesticides and their formulations.

†Requirements for packing of pesticides : Part I Solid pesticides (*first revision*).

4. SAMPLING

4.1 Representative samples of the material shall be drawn as prescribed in 'Indian Standard methods for sampling of pesticides and their formulations' (*Under Preparation*).

NOTE—Till such time the standard under preparation is published, the matter shall be as agreed to between the concerned parties.

5. TESTS

5.1 Tests shall be carried out by the appropriate methods referred to in **2.2.1** to **2.2.5, 2.3.1** and **2.3.2.**

5.2 Quality of Reagents—Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be employed in tests.

NOTE—'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A

(*Clauses* 2.2.3.1 *and* 2 3.1)

DETERMINATION OF BUTACHLOR CONTENT

A-1. REAGENTS

A-1.1 Benzene—free from thiophene and chlorine.

A-1.2 Isopropyl Alcohol—of 99 and 50 percent concentration by volume.

A-1.3 Metallic Sodium—pure, in the form of ribbon or cut in small pieces.

A-1.4 Phenolphthalein Indicator Solution—one percent (*m/v*) in rectified spirit.

A-1.5 Dilute Nitric Acid—50 percent (*v/v*).

A-1.6 Standard Silver Nitrate Solution — 0·1 N.

A-1.7 Ferric Ammonium Sulphate Solution—saturated, aqueous. freshly prepared.

A-1.8 Standard Potassium Thiocyanate Solution—0·1 N.

A-1.9 Nitro-benzene

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*Specification for water for general laboratory use (*second revision*)

A-2. PROCEDURE

A-2.1 Determination of Total Chlorine Content

A-2.1.1 Weigh accurately about 2·5 g of the material, transfer it to a 100-ml graduated flask, add 25 ml of 99 percent isopropyl alcohol. Shake for 15 minutes

A-2.1.2 Introduce approximately 3 g of matallic sodium into the Erlenmeyer flask containing the aliquot. Connect the flask to a reflux condenser and boil gently for at least 2½ hours, shaking the flask occasionally. Dissolve the excess metallic sodium by cautiously adding 10 ml of 50 percent isopropyl alcohol through the condenser at the rate of one to two drops per second. Boil for an additional 10 minutes and then add 60 ml of distilled water.

A-2.1.3 Cool, and add 2 to 3 drops of phenolphthalein indicator solution. Neutralize by adding dilute nitric acid dropwise and add 10 ml in excess. If necessary, cool the flask to room temperature, add a known volume of the standard silver nitrate solution in slight excess and coagulate the precipitated silver chloride by digesting on a steam-bath for half an hour or coagulate the precipitate by adding 1·5 ml of nitrobenzene with frequent stirring. Cool the flask and, if necessary, filter the contents of the flask through a fast qualitative filter paper, wash thoroughly with distilled water, collecting the filtrate quantitatively in an Erlenmeyer flask. Add 5 ml of ferric ammonium sulphate solution either to the cooled unifiltered mixture or to the filtrate, as the case may be, and titrate the excess of the silver nitrate with the standard potassium thiocyanate solution. (The end point is the appearance of red ferric thiocyanate colour).

A-2.1.4 Carry out a blank determination on the reagents, using the method given under **A-2.1.1** to **A-2.1.3**.

A-3. CALCULATIONS

A-3.1 Butachlor content, percent by mass $= \frac{V \times 3.118}{M} \times F$

where

V = Volume of silver nitrate used;

$F = \frac{\text{Percent butachlor, technical (GLC basis)}}{\text{Percent butachlor, technical (Chlorine basis)}}$; and

M = mass, in g, of the sample taken for the test.

(*Continued from page* 2)

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